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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: ACH et al.	)	Group Art Unit: 3654
Serial No.: 10/849,981	)	Examiner: T. Matthews
Filed: May 20, 2004	)	Attorney Docket: 16756
For: ELEVATOR SYSTEM	)	Confirmation No.: 8688
	)	Customer No.: 43935

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Commissioner for Patents
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Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Honorable Sir:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on June 17, 2007. Pursuant to 37 CFR §41.20(b)(2), please charge the fee for filing the Appeal Brief to Deposit Account No. 50-3156.

Respectfully submitted,

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In re Application of: ACH, et al.	)	Group Art Unit: 3654
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BRIEF ON APPEAL

(i) Real Party in Interest:

The real party in interest is INVENTIO AG, the assignee of record.

(ii) Related Appeals and Interferences:

An appeal has been filed and is currently pending in corresponding U.S. App. No. 10/849,970 filed on May 20, 2004 and entitled ELEVATOR SYSTEM. Both U.S. App. No. 10/849,970 and this application, U.S. App. No. 10/849,981, claim priority to EP 01811132.8 filed November 23, 2001, and both are filed by the same joint inventors. The Examiner is the same in both applications.

(iii) Status of Claims:

Claims 1 and 4-13 remain pending in the application. All of these claims are being appealed.

A utility patent application was filed on May 20, 2004 with Claims 1-14, wherein Claims 1 and 13 are independent claims, Claims 2-12 depend from claim 1 and Claim 14 depends from Claim 13.

A first office action was received on January 23, 2006 in which the Examiner rejected Claims 1-14. Specifically, the Examiner rejected Claims 1-14 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claiming the subject matter which Applicants regard as the invention. The Examiner stated the Claim 1 was found vague and indefinite because it was unclear as to

what qualifies as a "flat- belt-like" support. Claim 2 was found vague and indefinite because it was unclear as to what qualifies as "substantially" triangular and trapezium shaped.

Additionally, Claims 1-2 and 5-8 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Heinz (US App. Pub. No. 2003/121729). However, in the support of the rejections, the Examiner referred to Claims 1-4, Claim 7-10, Claims 11, 13-14 and Claim 12, but Claims 3, 4, 9, 10, 11, 12, 13 and 14 were not listed as being rejected. Although Claims 5 and 6 were listed as rejected, there was no support for these rejections by the Examiner. Claims 1 and 5-6 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935). Claim 9 was rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Heinz (US App. Pub. No. 2003/121729) in further view of Faletto (USPN 6,471,012).

Applicants filed a timely response on April 24, 2006, amending dependent Claims 2 and 14. Claims 1 and 3-13 were re-presented in their original format. Claims 2 and 14 were amended to eliminate the word "substantially" from each of these claims. Applicants reminded the Examiner that the Heinz (US App. Pub. No. 2003/121729) application was filed on January 2, 2002, subsequent to the November 23, 2001 filing date of EP Pat. App. No. 01811132.8 from which Applicants claim priority through PCT application PCT/CH02/00633. Thus the Heinz application is NOT prior art.

On July 18, 2006, a second non-final office action was received wherein the Examiner rejected Claims 1-7 and 13-14 under 35 USC §103(a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935). However, in the support of the rejections, the Examiner referred additionally to Claims 9 and 10, but these claims were not listed as being rejected. Claim 8 was rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1-7, 9-10, and 13-14 as previously stated and in further view of Bauer (US App. Pub. No. 2002/0185338). Claims 11-12 were rejected 35 USC §103 (a) as being unpatentable over Baranda (WO

99/43589) in view of Kinoshita (USPN 5,891,561) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1-7, 9-10, and 13-14 as previously stated and in further view of Mori (US App. Pub. No. 2002/0112924).

On October 18, 2006, Applicants filed a timely response wherein independent Claim 1 was amended to include the subject matter of canceled Claims 2 and 3. Independent Claim 13 was amended to include the subject matter of Canceled Claim 14. Additionally, Applicants sought approval for proposed drawings changes including amending Figure 3: changing reference numerals 23 to 23.1; 24-24.1; and Figure 4: changing reference numerals 23-23.2; and 24-24.2 with support for the changes found in the specification on Page 7, lines 30-32.

On January 17, 2007, the Examiner issued a Final Office action, stating that Claims 1 and 4-13 were finally rejected and Claims 2-3 and 14 were withdrawn. Claims 1, 4-7, and 13 were finally rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935). However, in the support of the rejections, the Examiner repeated the additional reference to Claims 9 and 10 where these claims were not listed as being rejected while failing to provide support or any explanation as to the rejection to Claim 13. The Examiner maintained the rejection of Claim 8 under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-7, 9-10, and 13-14 as previously stated and in further view of Bauer (US App. Pub. No. 2002/0185338). The Examiner also maintained the rejection to Claims 11 and 12 under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-7, 9-10, and 13-14 as previously stated and in further view of Mori (US App. Pub. No. 2002/0112924).

Applicants filed a timely response on April 17, 2007 without amendment to the claims. Applicants respectfully requested that, if the Examiner is not going to allow the claims as presented, then the Examiner is asked to reset the time for reply and

communicate a new Office Action that responds to the following items missing from the pending Final Office Action:

1) The Examiner did not indicate whether the proposed changes to Figs. 3 and 4 included in the prior Amendment are acceptable.
2) On Page 2 of the Final Office Action, the Examiner rejected Claims 1, 4-7 and 13. However, the Examiner did not provide any description of how the cited references are applied to Claim 13.
3) On Page 4 of the Final Office Action, the Examiner discusses Claims 9-10. However, Claims 9-10 are not listed in the rejection on Page 2 or any of the other rejections.

On May 15, 2007, the Examiner filed an Advisory Action stating that Applicants' request for reconsideration did not place the application in condition for allowance because the claims fail to overcome the previous rejections as taught by the prior art and cited in prior office actions.

On June 17, 2007, Applicants filed a Notice of Appeal and Pre-Appeal brief Request for Review. Applicants requested the Pre-appeal review for the following reasons:

1) The Examiner did not indicate whether the proposed changes to Figs. 3 and 4 included in the prior Amendment are acceptable. See Page 5 of Applicants' amendment filed on October 18, 2006.
2) On Page 2 of the Final Office Action, the Examiner rejected Claims 1, 4-7 and 13. However, the Examiner did not provide any description of how the cited references are applied to Claim 13.
3) On Page 4 of the Final Office Action, the Examiner discusses Claims 9-10. However, Claims 9-10 are not listed in the rejection on Page 2 or any of the other rejections.
4) The Examiner did not indicate whether Applicants' amendment filed April 17, 2007 will be entered for purposes of appeal.

On July 17, 2007, a panel decision regarding the Pre-Appeal review was received, directing Applicants to proceed to the Board of Patent Appeals and Interferences where at

least one actual issue remains for appeal. The panel determined that the status of the claims is as follows.

Claims rejected: 1, 4-13

Claims withdrawn: 2-3, 14

(iv) Status of amendments:

Although a response with arguments was filed subsequent to the final rejection, the claims were not amended beyond the amended set of claims filed by Applicants on October 18, 2006 in response to the second non-final office action mailed on July 18, 2006.

There has been no indication either way as to whether the amendment filed after the final office action has been entered or was denied entry for purposes of appeal.

The Pre-Appeal Review Board has stated that Claims 1 and 4-13 remain rejected while Claims 2-3 and 14 are withdrawn. Applicants have provided a copy of the claims as amended and filed on October 18, 2006 in the appendix.

(v) Summary of claimed subject matter:

The invention sought to be patented is directed to creating an elevator system and replacing the prior art flat-belt-like support means with flat traction surfaces by a wedge-ribbed belt. (Specification Page 3, lines 5-7). The novel system as set forth in independent Claim 1 comprises: a drive motor **2** mounted at a head of an elevator shaft **1** (page 6, lines13-14) and having a drive pulley **16** (page 6, line16); an elevator car **3** of a cantilever mode of construction (**Figure 1**, Specification Page 6, lines 7-8) movable in the elevator shaft **1** (page 6, lines 5-6) along guide rails **5** (page 6, lines 8-10) positioned at one side of the elevator car **3** (**Figure 1**, page 6, lines 10-12); a counterweight **8** (page 6, lines 8-10) moveable in the elevator shaft **1** and arranged laterally of the elevator car **3** (**Figure 1**, page 6, lines 10-12); and a flat-belt-like support means **12** (page 6, lines 5-8) supporting the elevator car **3** (page 6, lines 5-8) and engaging the drive pulley **16** (page 6, lines 5-8), the support means **12** being a wedge-ribbed belt **12** (**Figures 3 and 4**, page 6, lines 15-17, 20) having a running surface facing the drive pulley **16** (page 7, lines 8-12) and a plurality of ribs **23** and grooves **24** (page 7, lines 30-32, page 8, line 1) formed in

the running surface and extending parallel in a longitudinal direction of the support means **12**, the ribs **23** and grooves **24** being one of triangular-shaped and trapezium shaped in cross section (**Figures 3 and 4**, page 7, lines 31-32, page 8, line 1) and formed with lateral flanks at an angle **b** in a range of 80° to 100° (page 8, lines 5-7).

The novel system as set forth in independent Claim 13 comprises: an elevator car support for use in an elevator system (**Figures 1 and 2**) having a drive motor **2** mounted at a head of an elevator shaft **1** (page 6, lines13-14) and having a drive pulley **16** (page 6, line16) for engaging the support, the support comprising a wedge-ribbed belt **12** (**Figures 3 and 4**, page 6, lines 15-17, 20) adapted to support the elevator car **3** in a cantilever mode and engaging the drive pulley **16** (**Figure 2**, page 6, lines 7-8), the belt **12** having a running surface adapted to face the drive pulley **16** (page 7, lines 8-12) and a plurality of ribs **23** and grooves **24** (page 7, lines 30-32, page 8, line 1) formed in the running surface and extending parallel in a longitudinal direction of the belt **12**, the ribs **23** and grooves **24** being one of triangular-shaped and trapezium shaped in cross section (**Figures 3 and 4**, page 7, lines 31-32, page 8, line 1) and formed with lateral flanks at an angle **b** in a range of 80° to 100° (page 8, lines 5-7).

The wedge-ribbed belt has in the region of its traction surface several ribs and grooves which extend parallel in a belt longitudinal direction and the cross-sections of which have lateral flanks running towards one another in a wedge-shaped manner. When running around the drive pulley, at the periphery of which there are similarly present ribs and grooves complementary to those of the wedge-ribbed belt, the wedge-shaped ribs of the wedge-ribbed belt are pressed into the wedge-shaped grooves of the drive pulley. In that case, due to the wedge shape the perpendicular forces arising between drive pulley and wedge-ribbed belt are increased so that an improvement in the traction capability between drive pulley and belt results.

In addition, the interengagement of the ribs and grooves of the wedge-ribbed belt in those of the pulleys and rollers ensures excellent, distributed lateral guidance of the support means on several rib and groove flanks.

Fig. 1 shows a section, which is parallel to an elevator car front, through an elevator system according to the present invention. An elevator shaft, in which a drive motor **2** moves an elevator car **3** upwardly and downwardly by way of a support means in

the form of a wedge-ribbed belt **12**, is characterized by the reference numeral **1**. The elevator car **3** is guided by means of car guide shoes **4** at car guide rails **5** fixed in the elevator shaft **1**. Mounted below a car floor **6** on both sides are car support rollers **7** by way of which the supporting and acceleration forces of the wedge-ribbed belts **12** are transmitted to the elevator car **3**. A counterweight **8**, which is guided by means of counterweight guide shoes **9** at two counterweight guide rails **10** and is suspended by means of a counterweight support roller **11** at the same wedge-ribbed belt **12** as the elevator car **3**, is arranged on the left-hand side of the elevator car **3**. The drive motor **2** is mounted above the shaft space taken up by the elevator car **3** and comprises a driven shaft **14** acting on a drive pulley shaft **15**, wherein the drive pulley shaft is oriented parallel to the wall of the elevator car **3** at the counterweight side and carries at least one drive pulley **16**. The drive motor **2** is fastened on a motor carrier **13** which is supported on the car guide rails **5** at the counterweight side as well as on the two counterweight guide rails **10** and is fixedly connected with these.

In addition, a controllable brake unit **17**, which is here represented as invisible and which is arranged in the region of the end of the drive pulley shaft remote from the drive motor **2**, is mounted on the motor carrier **13** supporting the drive motor **2** and can brake the drive pulley shaft **15** and thus the drive pulley **16**. The brake unit **17** serves at the same time as a mounting for the stated end of the drive pulley shaft **15**. The advantage of this arrangement resides in the fact that in the case of a motor failure the possibility of braking the drive pulley is maintained.

The plane of the drive pulley **16** is arranged at right angles to the car wall at the counterweight side and lies approximately in the middle of the car depth. The vertical projection of the drive pulley **16** lies outside the vertical projection of the elevator car **3**, whereas a part of the vertical projection of the drive motor **2** is superimposed on that of the elevator car **3**. The drive pulley 16 preferably has a diameter in a range of 70 to 100 millimeters.

The wedge-ribbed belt **12** serving as the support means is fastened at one of its ends below the drive pulley **16**, and in the region of the vertical projection thereof, to the motor carrier **13**. From this first support means fixing point **18** it extends downwardly to the side, which faces the elevator car **3**, of the periphery of the counterweight support

roller **11**, loops around the counterweight support roller, extends from this to the side, which is remote from the elevator car, of the periphery of the drive pulley **16**, loops around the drive pulley and runs downwardly along the car wall at the counterweight side, loops by 90° on the two sides of the elevator car around the respective car support rollers **7** mounted below the car and runs upwardly along a car wall remote from the counterweight to a second support means fixing point **19**.

The described support means arrangement produces in each instance vertical movements of elevator car **3** and counterweight **8** in opposite sense, wherein the speed thereof corresponds with half the circumferential speed of the drive pulley **16**. The special arrangement of the first support means fixing point **18** enables a smallest possible spacing between the car wall at the counterweight side and the shaft wall when no twisting of the support means is permitted, i.e. when the planes of the drive pulley **16** and the counterweight support roller **11** are to be aligned with the planes of the car support rollers **7**, which is virtually invariably the case with flat-belt-like support means.

Fig. 2 shows a special alternate embodiment of the lower looping around the bottom **6** of the elevator car **3** by the wedge-ribbed belt **12**. In addition to the car support rollers **7** mentioned in the foregoing there is fastened, between these, to the car floor **6** a guide roller **20** which is similarly provided with ribs and grooves.

Such a guide roller takes over lateral guidance of the wedge-ribbed belt **12** having ribs and grooves only on a running surface. Such a wedge-ribbed belt **12** is laterally guided by the car support rollers **7** without the help of the ribs and grooves, since these are directed radially outwardly during running around these car support rollers **7**. Such guidance is not, however, necessary in every case, for example not when the car support rollers are equipped with boundary discs or are of sufficient length.

Figs. 3 and 4 show possible embodiments **12.1** and **12.2** of the wedge-ribbed belt **12**, which are usable for the elevator system according to the present invention, with ribs and grooves oriented in longitudinal direction of the belt.

In the case of the embodiment **12.1** according to Fig. 3, ribs **23.1** and grooves **24.1** have a triangular cross-section. In the case of the embodiment 12.2 according to Fig. 4, ribs **23.2** and grooves **24.2** have a trapezium-shaped cross-section. An angle "**b**" present between the flanks of a rib or a groove influences the operating characteristics of a

wedge-ribbed belt, particularly the running quietness thereof and the traction capability thereof. Tests have shown that it is applicable within certain limits that the larger the angle "**b**", the better the running quietness and the worse the traction capability. Advantageous properties with respect to running quietness and traction capability have been achieved simultaneously if the angle "**b**" lies between 80° and 100°. An optimum compromise between the opposing requirements is achieved by wedge-ribbed belts in which the angle "**b**" lies at approximately 90°.

A further possibility of refinement of the wedge-ribbed belt **12.2** is recognizable from Fig. 4. The wedge-ribbed belt **12.2** has, apart from the wedge-shaped ribs **23.2** and grooves **24.2**, also transverse grooves **26**. These transverse grooves **26** improve the bending flexibility of the wedge-ribbed element **12.2**, so that this can co-operate with drive pulleys, support rollers and deflecting rollers which have extremely small diameters.

(vi) Grounds of Rejection to be Reviewed on Appeal:

Initially, Applicants request a finding on the following outstanding issues:

1) The Examiner did not indicate whether the proposed changes to Figs. 3 and 4 included in the prior Amendment are acceptable. See Page 5 of Applicants' amendment filed on October 18, 2006.
2) On Page 2 of the Final Office Action, the Examiner rejected Claims 1, 4-7 and 13. However, the Examiner did not provide any description of how the cited references are applied to Claim 13.
3) On Page 4 of the Final Office Action, the Examiner discusses Claims 9-10. However, Claims 9-10 are not listed in the rejection on Page 2 or any of the other rejections.
4) The Examiner did not indicate whether Applicants' amendment filed April 17, 2007 will be entered for purposes of appeal.

Additionally, Applicants request review of the following grounds of rejection set forth by the Examiner:

Claims 1, 4-7, and 13 finally rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935).

The rejection of Claim 8 under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-7, 9-10, and 13-14 as previously stated and in further view of Bauer (US App. Pub. No. 2002/0185338).

The rejection to Claims 11 and 12 under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-7, 9-10, and 13-14 as previously stated and in further view of Mori (US App. Pub. No. 2002/0112924).

(vii) Argument:

With reference to Applicants' request for findings, Applicants respectfully submit that the status of independent Claim 13 remains unanswered, along with the status of dependent Claims 9 and 10. Specifically, the Examiner has not indicated in any writing whether Claim 13 has been finally rejected nor provided any means for supporting the status of this independent Claim 13. The same holds true for dependent Claims 9 and 10.

Based on the findings of the Review Board, Applicants respectfully submit that even if Claim 13 is considered rejected; no grounds for supporting this rejection have been stated. As such, Applicants respectfully submit that the arguments presented below are provided with the presumption that Claim 13, along with Claims 9 and 10, are rejected based on all of the prior art cited by the Examiner.

Claims 1, 4-7, and 13 finally rejected under 35 USC §103 (a):

Referring to Claims 1 and 4-7, the Examiner stated that Baranda discloses a drive motor (42) mounted at a head of an elevator shaft and having a drive pulley; an elevator car (16) movable in the elevator shaft; a counterweight (48) movable in the elevator shaft and arranged laterally of the elevator car (See Pg. 2 - Pg. 31. 17 & Fig. 2), a flat-belt-like support means supporting the elevator car by under looping and engaging the drive pulley. The Examiner commented that Baranda does not disclose the support means

being a wedge-ribbed belt having a running surface facing the drive pulley and a plurality of ribs and grooves formed with an angle in the range of 80 to 100 degrees in the running surface and extending in parallel in a longitudinal direction of the support means.

The Examiner stated that Kinoshita discloses a wedge-ribbed belt (10) with ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section (See at least Col. 31. 12-30 and at least Fig. 1). According to the Examiner, Danhauer discloses a belt (10) with a plurality of ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction on the support means (See Sect. 0017 & Figs. 1-2), and further discloses that the belt (10) is provided with a plurality of transverse grooves (34) (See Sect. 0025) and that the grooves are provided at an inclined angle. Additionally, the Examiner notes that the belt (10) has at least two wedge-ribbed belt strands arranged in parallel (See Figs. 1-2). According to the Examiner it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Baranda to include the teachings of Danhauer and provide a wedge-ribbed belt with a plurality of ribs and grooves formed in the running surface as well as transverse grooves and ribbed strands formed at an inclined angle as taught by Kinoshita and Danhauer so that the belt could provide better traction, increased flexibility, running quietness, and a higher load capacity.

Referring to Claim 7, the Examiner commented that Baranda does not disclose that the drive pulley has an external diameter in a range of 70 to 100 millimeters, but it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda to include drive pulleys that were in the range of 70 to 100 millimeters so that greater torque and lifting capacity could be achieved.

Referring to Claims 9-10, the Examiner stated that Baranda discloses that the drive motor and drive pulley are mounted in a space which lies between one side of the elevator car, when the elevator car is standing in an uppermost position in the elevator shaft, and an adjacent wall of the elevator of the elevator shaft and an axis of the drive pulley is arranged horizontally and parallel to the one side of the elevator car (See Fig. 2), and further discloses a belt connected at one end of the side of the elevator car at a first support means fixing point (104), which extends from the first support means fixing point

vertically upwards to a side which faces the elevator car, of a periphery of the drive pulley, loops around the drive pulley by 180 and then runs vertically to a second support means fixing point (102) at the counterweight (See Fig. 3). The Examiner commented that Baranda does not disclose that the belt connected at one end of the elevator is a wedge-ribbed belt, but it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda an implement an wedge-ribbed belt as taught by Kinoshita for reasons as discussed above.

Claim 1:

Claim 1 recites a flat-belt-like support means supporting said elevator car and engaging said drive pulley, said support means being a wedge-ribbed belt having a running surface facing said drive pulley and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said support means, said ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section and formed with lateral flanks at an angle in a range of 80° to 100°. Claim 13 includes similar limitations.

Claims 1 and 13:

The Examiner again rejects independent Claims 1 and 13 as being unpatentable over Baranda in view of Kinoshita, and further in view of Danhauer. In response to Applicant's arguments in the previous Amendment, the Examiner stated that Applicants' focus on grooves being formed with lateral flanks at an angle in a range between 80° to 100°" is unpersuasive because Danhauer teaches that it is known in the art to provide grooves with lateral flanks formed at an inclined angle and it would have been have been obvious to one having ordinary skill in the art at the time of the invention to provide the grooves formed with lateral flanks at an angle in a range of 80° to 100°, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art to which it would have been obvious to do so in order to increase traction capability, running quietness, and load capacity.

This is not a case of "adjustability". Applicants note that the Examiner has failed to cite any art showing a wedge-ribbed belt having lateral flanks arranged with an angle in the range recited in Applicants' claims. There is a reason for this failure to locate such prior art. Generally known and available wedge-ribbed belts (also called poly-v belts)

have ribs and grooves with lateral flanks arranged at a wedge angle in a range of 35° to 40°. See the attached Exhibits 1 and 2. Applicants are unable to find any documents showing wedge-ribbed belts having wider wedge angles between the flanks of their ribs and grooves, and has not found single v-belts having wedge angles of more than 60°.

The wedge-ribbed belts according to the claimed invention, having wedge angles between the flanks of their ribs and grooves in a range of 80° to 100°, are the result of extensive research and test work in order to find an optimum belt for suspending and driving elevator cars. Findings resulting from said research and test work include:

1. A wedge-ribbed elevator belt made from elastomeric material and having ribs with an edge angle smaller than 80° to 100° may cause the following problems:

- the tensioned belt running about a belt sheave generates a high noise level due to the fact that the ribs are strongly being jammed between the flanks of the corresponding grooves of the sheave.
- due to said jamming effect, there is the risk that the drive sheave of the elevator further lifts the elevator car (respectively the counterweight) if, due to a control failure, the counterweight (respectively the elevator car) strikes its lower limit stop.

2. If the wedge-ribbed elevator belt has ribs with the angle being bigger than 80° to 100°:

- the lateral guiding of the belt on its sheaves isn't guaranteed; i.e. there is a high risk of derailment of the belt from the sheaves.
- the required traction (friction) between the drive sheave and the wedge-ribbed belt may not be reached.

As stated in Applicants' specification in the paragraph beginning on Page 7, at Line 30:

> In the case of the embodiment **12.1** according to Fig. 3, a plurality of ribs **23.1** and grooves **24.1** formed in a running surface have a triangular cross-section. In the case of the embodiment **12.2** according to Fig. 4, a plurality of ribs **23.2** and grooves **24.2** formed in the running surface have a trapezium-shaped cross-section. An angle "**b**" present between the flanks of a rib or a groove influences the operating

> characteristics of a wedge-ribbed belt, particularly the running quietness thereof and the traction capability thereof. Tests have shown that it is applicable within certain limits that the larger the angle "**b**" the better the running quietness and the worse the traction capability. With consideration of the demands on running quietness as well as traction capability the angle "**b**" should lie between 80° and 100°. An optimum compromise between the opposing requirements is achieved by wedge-ribbed belts in which the angle "**b**" lies at approximately 90°.

Thus, one of ordinary skill in the art would not increase the angle from the typical range of 35° to 40° since it is known that there would be a loss of traction capability. For these reasons, Applicants are firmly convinced that the cited prior art would not lead a person having ordinary skill in the art to provide a wedge-ribbed elevator belt having ribs and grooves formed with lateral flanks at an angle in a range of 80° to 100°.

The rejection of Claim 8 under 35 USC §103 (a):

Claim 8:

This rejection is based on the arguments set forth by the Examiner as to the rejection to Claims 1, 4-7, and 13 (and apparently, Claims 9 and 10). As such, Applicants respectfully submit that the arguments for patentability over the cited prior art as set forth above, apply to Claim 8.

The rejection to Claims 11 and 12 under 35 USC §103 (a):

Claims 11 and 12:

This rejection is based on the arguments set forth by the Examiner as to the rejection to Claims 1, 4-7, and 13 (and Claims 9 and 10). As such, Applicants respectfully submit that the arguments for patentability over the cited prior art as set forth above, apply to Claims 11 and 12.

The Examiner stated that the prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. The Examiner cited Heinz (US-

2003/0121729) as disclosing a "Lift Belt System" comprising a belt with grooves being one of triangular-shaped and trapezium-shaped in cross section and being formed with lateral flanks at an angle. Applicants reviewed this reference and found it to be no more pertinent than the prior art relied upon by the Examiner in the rejections.

For the foregoing reasons, Applicants respectfully submit that the Claims 1 and 4-13 on appeal each define subject matter which is not rendered obvious to one of ordinary skill in the art at the time the invention was made. Accordingly, all of the claims on appeal are believed to be entitled to allowance, and a favorable decision is courteously solicited.

Respectfully submitted,

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419-874-1130 (FAX)

(viii) Claims Appendix:

The claims on Appeal read as follows:

1. (Previously Presented) An elevator system comprising:

a drive motor mounted at a head of an elevator shaft and having a drive pulley;

an elevator car movable in the elevator shaft in a cantilever mode along guide rails positioned at one side of said elevator car;

a counterweight movable in the elevator shaft and arranged laterally of said elevator car; and

a flat-belt-like support means supporting said elevator car and engaging said drive pulley, said support means being a wedge-ribbed belt having a running surface facing said drive pulley and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said support means, said ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section and formed with lateral flanks at an angle in a range of 80° to 100°.

Claims 2-3 (Cancelled)

4. (Previously Presented) The elevator system according to claim 1 wherein said angle is 90°.

5. (Original) The elevator system according to claim 1 wherein said wedge-ribbed belt has a plurality of transverse grooves formed in said running surface.

6. (Original) The elevator system according to claim 1 wherein said support means includes at least two wedge-ribbed belt strands arranged in parallel.

7. (Original) The elevator system according to claim 1 wherein said drive pulley has an external diameter in a range of 70 millimeters to 100 millimeters.

8. (Original) The elevator system according to claim 1 including a pair of vertical guide columns mounted in the elevator shaft at said one side of said elevator car, each said guide column having one of said car guide rails and a counterweight guide rail formed thereon, and wherein said drive motor together with said drive pulley are mounted on a drive bracket attached to at least one of said guide columns.

9. (Original) The elevator system according to claim 1 wherein said drive motor and said drive pulley are mounted in a space which lies between said one side of said elevator car, when said elevator car is standing in an uppermost position in the elevator shaft, and an adjacent wall of the elevator shaft and an axis of said drive pulley is arranged horizontally and parallel to said one side of said elevator car.

10. (Original) The elevator system according to claim 1 wherein said wedge-ribbed belt is connected at one end at said one side of said elevator car at a first support means fixing point, extends from said first support means fixing point vertically upwards to a side, which faces said elevator car, of a periphery of said drive pulley, loops around said drive pulley by 180° and then runs vertically downwards to a second support means fixing point at said counterweight.

11. (Original) The elevator system according to claim 1 including a belt transmission means coupling said drive motor to said drive pulley.

12. (Original) The elevator system according to claim 11 wherein said belt transmission means includes at least one of a cogged belt and a wedge-ribbed belt coupling said drive motor to said drive pulley.

13. (Previously Presented) An elevator car support for use in an elevator system having a drive motor mounted at a head of an elevator shaft and having a drive pulley for engaging the support, the support comprising: a wedge-ribbed belt adapted to support the elevator car in a cantilever mode and engaging the drive pulley, said belt having a running surface adapted to face the drive pulley and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said belt, said ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section and being formed with lateral flanks at an angle in a range of 80° to 100°.

Claim 14 (Cancelled)

(ix) *Evidence Appendix:*

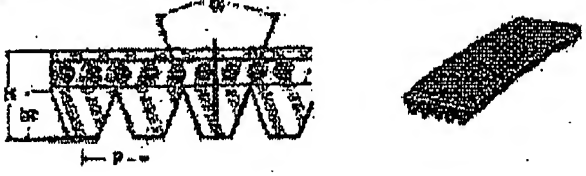
1. Data Sheet "CANDO- YOUR SINGLE SOURCE SUPPLIER OF BELTS & HOSES" – presented by Applicant in response to the final office action, Applicant's amendment dated March 7, 2007.

2. Data Sheet "ROLOFF/MATEK 16.AUFLAGE" - presented by Applicant in response to the final office action, Applicant's amendment dated March 7, 2007.

(x) *Related Proceedings Appendix:*

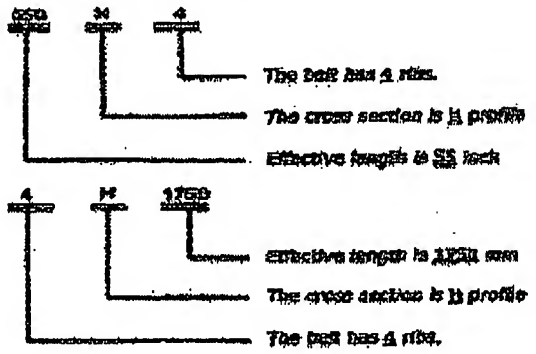
None. A decision in the related proceeding has not been rendered.

Cross section, profile and measurement of Poly-v belt



profile	pitch: P	height: ht	height of belt: H	angle of rib:
H	1.6	1.1	3.0 ± 0.15	40° ± 2°
J	2.34	1.8	3.9 ± 0.25	40° ± 2°
K	3.56	2.4	5.5 ± 0.30	40° ± 2°
L	4.7	4.6	9.0 ± 0.40	40° ± 2°
M	9.4	9.4	16.0 ± 0.60	40° ± 2°

EXAMPLE ILLUSTRATIONS



Profile H series

Metric No.	Part No.	Metric No.	Part No.	Metric No.	Part No.
H 519	204 H	H 979	385 H	H 1549	610 H
H 536	211 H	H 990	390 H	H 1552	611 H
H 556	219 H	H 999	393 H	H 1565	616 H
H 581	229 H	H 1015	400 H	H 1596	628 H
H 600	236 H	H 1043	411 H	H 1627	641 H
H 614	242 H	H 1065	419 H	H 1635	644 H
H 622	245 H	H 1081	426 H	H 1659	653 H
H 638	251 H	H 1083	427 H	H 1678	661 H
H 644	254 H	H 1090	429 H	H 1744	687 H
H 657	259 H	H 1093	430 H	H 1750	689 H
H 668	263 H	H 1105	435 H	H 1806	711 H
H 679	267 H	H 1137	448 H	H 1841	725 H
H 691	272 H	H 1150	453 H	H 1863	733 H

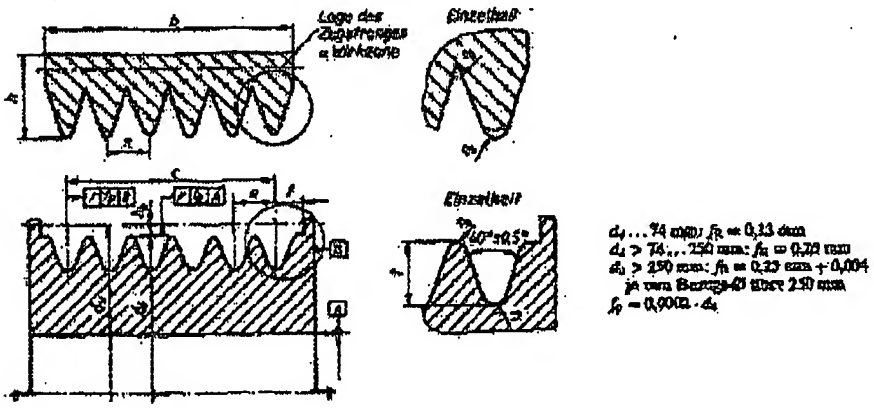
Roloff / Matek 16.Auflage

TB 16-14 Keilrippenrippen und Keilrippenscheiben nach DIN 7867
(Tabellenwerte in Anlehnung an DIN 7867 und Werksangaben)

	Profil-Kennzeichen		PH	PJ	PK	PL	PM
Keilrippenriemen nach DIN 7867	Rippenabstand	s	1,60 ± 0,2	2,34 ± 0,2	3,56 ± 0,2	4,70 ± 0,2	9,40 ± 0,2
	Rippenhöhe	h min[1]	3	4	6	10	17
	Anzahl der Rippen	$z^{2)}$	2...31	2...39	3...50	3...60	3...43
	Rippenbreite	b	$b = s \cdot z$				
	Rippengrundradius	r_{fg} max	0,15	0,20	0,25	0,40	0,75
	Rippenkopfradius	r_a min	0,30	0,40	0,50	0,40	0,75
	Standard-Richtlänge L_d[2)]	min	559	330	559	954	2286
		max	2159	2489	3472	4696	15266
	zul. Riemengeschwindigkeit	v max[2)]	60 m/s	50 m/s	50 m/s	40 m/s	30 m/s
Keilrippenscheiben nach DIN 7867	Profil-Kennzeichen		H	J	K	L	M
	Rillenabstand	e	1,60 ± 0,03	2,34 ± 0,03	3,56 ± 0,05	4,70 ± 0,05	9,40 ± 0,08
	Gesamtabstand	a	$a = (\text{Rippenanzahl } z - 1) \cdot e$ Toleranz für a: ±0,30				
	Richtdurchmesser	$d_{d\,min}$	13	20	45	75	180
		Stufung	nach DIN 323 Normzahlreihe R20 (s. TB 1-16)				
	Innenradius	$r_{i\,max}$	0,30	0,40	0,50	0,40	0,75
	Außenradius	$r_{a\,min}$	0,15	0,20	0,25	0,40	0,75
	Profiltiefe	t_{ps}[2)]	1,39	2,06	3,45	4,92	10,03
	Randabstand	f_{min}	1,3	1,8	2,5	3,3	6,4
	Wirkdurchmesser	d_w	$d_w = d_d + 2h_s$				
	Rezeptiefe	h_s	0,8	1,25	1,6	3,5	8,0

1) Maße nach Wahl des Herstellers
2) Herstiller-Angaben: vorzugsweise nach DIN 323 R'40

16



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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2007

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	10/849,981
Filing Date	May 20, 2004
First Named Inventor	Ach
Examiner Name	T. Matthews
Art Unit	3654
Attorney Docket No.	16756

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-3156 Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☐ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☐ Credit any overpayments

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
Application Type	Fee ($)	Small Entity Fee ($)	Fee ($)	Small Entity Fee ($)	Fee ($)	Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims _____ - 20 or HP = _____ x Fee ($) _____ = Fee Paid ($) _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims _____ - 3 or HP = _____ x Fee ($) _____ = Fee Paid ($) _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims: Fee ($) _____ Fee Paid ($) _____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets _____ - 100 = _____ Extra Sheets / 50 = _____ Number of each additional 50 or fraction thereof (round up to a whole number) x Fee ($) _____ = Fee Paid ($) _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Filing Appeal Brief	500.00

SUBMITTED BY

Signature	William J. Clemens	Registration No. (Attorney/Agent) 26,855	Telephone 248-960-2100
Name (Print/Type)	William J. Clemens		Date August 16, 2007

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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